

## REMARKS

In the Office Action mailed October 18, 2005, Claims 1, 4-5, 7-11, 17, 19, 22, and 35 were rejected under Section 102 as being anticipated by U.S. Patent Nos. 3,215,906 (Taber), 3,227,913 (Disman), 4,539,512 (Heynisch), 4,839,059 (Leupold), and 5,103,200 (Leupold). In response, applicant has amended independent Claims 19 and 35 of the present application, as above, to more specifically recite the subject matter that applicant considers as his invention. Below, applicant sets forth a brief discussion of each of the cited references and the claim amendment.

### Discussion of the Cited Prior Art References

U.S. Patent No. 3,215,906 (Taber, 1965) describes a traveling wave tube (TWT) that produces a circularly (cylindrically) symmetric magnetic field distribution. It uses temperature compensating steel in a TWT, but does not teach or suggest using temperature compensating steel in a wiggler/undulator that produces a linearly symmetric magnetic field distribution.

U.S. Patent No. 3,227,913 (Disman, 1966) similarly describes a TWT and using temperature compensating steel in a TWT. Again, Disman does not teach or suggest using temperature compensating steel in wigglers/undulators.

U.S. Patent No. 4,539,512 (Heynisch, 1985) is another TWT patent. It mentions temperature compensation, but nowhere teaches nor suggests using temperature compensating steel in wigglers/undulators.

U.S. Patent No. 4,839,059 (Leupold, 1989) describes an undulator/wiggler device using permanent magnets only. No steel is used, let alone temperature compensating steel.

U.S. Patent No. 5,103,200 (Leupold, 1992) describes a magnet flux source that uses *magnets* with opposite dB/dT in shells to create a dipole field with dB/dT=0. (Col. 4, lines 14-62, note that "magic rings 51, 52" with opposite dB/dT are both magnets, which together form a

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100

"magic-ring type magnet 50"). For example, one set of *magnets* could be NdFeB with negative dB/dT and the other could be a special alloy of SmCo with positive dB/dT. This is highly impractical because SmCo material with positive dB/dT is very expensive and only available in limited quantities. In any event, this reference does not teach or suggest using temperature compensating steel in wiggler/undulators.

Claim Amendment

Claims 19 and 35 both specifically recite that they are directed to an "undulator" (i.e., a wiggler). The claims are further amended to explicitly recite that the "undulator" produces a linearly symmetric periodic spatial magnetic field distribution, quite contrary to a traveling wave tube (TWT) of Taber, Disman, and Heynisch, which produce a cylindrically (circularly) symmetric magnetic field. Support for the claim amendment can be found, for example, at page 9, lines 18-19 of the specification, and also in various undulator/wiggler configurations disclosed in the specification which all show a linearly symmetric magnetic field distribution. Further, Claims 19 and 35 were amended to specifically recite the use of "temperature compensating steel," which is neither taught nor suggested in either one of the Leupold references. Support for the claim amendment can be found, for example, at page 7, lines 17-19 of the specification as filed.

With the above claim amendments, it is respectfully submitted that Claims 19 and 35 are not anticipated by any of the cited and applied prior art references and, accordingly, these claims (as amended) are allowable.

The rest of the claims (Claims 1-18 and 20-34) all depend from either amended Claim 19 or 35, and therefore these dependent claims are also believed to be allowable for at least the same reasons why amended Claims 19 and 35 are allowable.

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100

If the Examiner should have any questions, he is invited to contact applicant's undersigned attorney at the number set forth below.

Respectfully submitted,

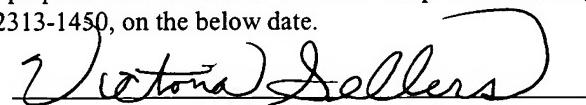
CHRISTENSEN O'CONNOR  
JOHNSON KINDNESS<sup>PLLC</sup>



Shoko I. Leek  
Registration No. 43,746  
Direct Dial No. 206.695.1780

I hereby certify that this correspondence is being deposited with the U.S. Postal Service in a sealed envelope as first class mail with postage thereon fully prepaid and addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the below date.

Date: February 21, 2006



SIL:dmg

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100